Having thus defined the invention, the following is claimed:

1. A device for cleaning a wire having an outer surface with a given diameter and moving along a given path in a given direction, said device comprising: a conductive contact tube surrounding said path and electrically engageable with said wire as it moves along said path and through said contact tube; a dielectric sleeve adjacent said contact tube and extending in said given direction from said contact tube and around said path to define an annular gas passage between said dielectric sleeve and said wire; a cleaning gas inlet to said passage adjacent said contact tube to flow cleaning gas in said passage in said given direction; a conductive electrode sleeve around said dielectric sleeve; and terminals on said electrode sleeve and said contact tube to connect a high frequency power source between said electrode sleeve and said tube to create a dielectric barrier discharge plasma of said cleaning gas in said annular passage.

2. A wire cleaning device as defined in claim 1 wherein said cleaning gas is air.

3. A wire cleaning device as defined in claim 1 wherein said cleaning gas includes one or more of the gases selected from the class consisting of air, oxygen, nitrogen, argon, helium, neon, xenon, krypton, carbon dioxide, hydrogen, nitrous oxide and steam.

4. A wire cleaning device as defined in claim 1 wherein said frequency is greater than 500 hertz.

5. A wire cleaning device as defined in claim 1 wherein said frequency is greater than 18 kHz.

6. A wire cleaning device as defined in claim 1 wherein said frequency is less than 2000 MHz.

7. A wire cleaning device as defined in claim 1 wherein said high frequency has a voltage greater than 1000 volts.

8. A wire cleaning device as defined in claim 1 wherein said high frequency has a voltage in the general range of 1-40 kV.

9. A wire cleaning device as defined in claim 2 wherein said high frequency has a voltage in the general range of 1-40 kV.

10. A wire cleaning device as defined in claim 4 wherein said high frequency has a voltage in the general range of 1-40 kV.

11. A wire cleaning device as defined in claim 5 wherein said high frequency has a voltage in the general range of 1-40 kV.

12. A wire cleaning device as defined in claim 6 wherein said high frequency has a voltage in the general range of 1-40 kV.

13. A wire cleaning device as defined in claim 1 wherein said passage has a gap width in the general range of 0.2-3.0 cm.

14. A wire cleaning device as defined in claim 9 wherein said passage has a gap width in the general range of 0.2-3.0 cm.

15. A wire cleaning device as defined in claim 8 wherein said passage has a gap width in the general range of 0.2-3.0 cm.

16. A wire cleaning device as defined in claim 5 wherein said passage has a gap width in the general range of 0.2-3.0 cm.

17. A wire cleaning device as defined in claim 4 wherein said passage has a gap width in the general range of 0.2-3.0 cm.

18. A wire cleaning device as defined in claim 2 wherein said passage has a gap width in the general range of 0.2-3.0 cm.

19. A wire cleaning device as defined in claim 1 wherein said passage has a gap width of about 0.3-0.5 cm.

20. A wire cleaning device as defined in claim 2 wherein said passage has a gap width of about 0.3-0.5 cm.

21. A wire cleaning device as defined in claim 5 wherein said passage has a gap width of about 0.3-0.5 cm.

22. A wire cleaning device as defined in claim 1 wherein said dielectric sleeve is formed from a material selected from the class including ceramic, glass and polymer.

23. A wire cleaning device as defined in claim 2 wherein said dielectric sleeve is formed of ceramic.

24. A wire cleaning device as defined in claim 1 wherein said dielectric sleeve is transparent and including a sealed light emitting cylindrical chamber concentric with

said path and between said conductive electrode sleeve and said dielectric sleeve, said chamber filled with a light emitting gas with molecules electrically excited by said power source.

25. A wire cleaning device as defined in claim 24 wherein said cylindrical chamber comprises an outer dielectric sleeve between said dielectric sleeve and said conductive electrode sleeve.

26. A wire cleaning device as defined in clam 25 wherein said outer dielectric sleeve has an outer cylindrical surface and said conductive electrode has an inner cylindrical surface with one of said surfaces being a polished mirror.

27. A wire cleaning device as defined in clam 24 wherein said outer dielectric sleeve has an outer cylindrical surface and said conductive electrode has an inner cylindrical surface with one of said surfaces being a polished mirror.

28. A wire cleaning device as defined in claim 27 wherein said cylindrical chamber has a width of 0.2-6.0 mm.

29. A wire cleaning device as defined in claim 28 wherein said chamber width is in the range of 1.0-2.0 mm.

30. A wire cleaning device as defined in claim 26 wherein said cylindrical chamber has a width of 0.2-6.0 mm.

31. A wire cleaning device as defined in claim 30 wherein said chamber width is in the range of 1.0-2.0 mm.

32. A wire cleaning device as defined in claim 25 wherein said cylindrical chamber has a width of 0.2-6.0 mm.

33. A wire cleaning device as defined in claim 32 wherein said chamber width is in the range of 1.0-2.0 mm.

34. A wire cleaning device as defined in claim 24 wherein said cylindrical chamber has a width of 0.2-6.0 mm.

35. A wire cleaning device as defined in claim 34 wherein said chamber width is in the range of 1.0-2.0 mm.

36. A wire cleaning device as defined in claim 34 wherein said light emitting gas, by weight is:

Helium	50-100%
Nitrogen	0-50%

Carbon dioxide	0-15%
Argon	0-5%
Krypton	0-5%
Xenon	0-5%

37. A wire cleaning device as defined in claim 25 wherein said light emitting gas, by weight is:

Helium	50-100%
Nitrogen	0-50%
Carbon dioxide	0-15%
Argon	0-5%
Krypton	0-5%
Xenon	0-5%

38. A wire cleaning device as defined in claim 24 wherein said light emitting gas, by weight is:

Helium	50-100%
Nitrogen	0-50%
Carbon dioxide	0-15%
Argon	0-5%
Krypton	0-5%
Xenon	0-5%

39. A wire cleaning device as defined in claim 1 including a supply of gaseous material and an outlet from said supply, said outlet connected to said annular gas passage whereby said material treats said moving wire by said plasma.

40. A wire cleaning device as defined in claim 39 wherein said gaseous material is vaporized alkali metal selected from the class consisting of potassium, sodium, cesium, rubidium, lithium, barium, calcium and combinations thereof.

41. A wire cleaning device as defined in claim 39 wherein said cleaning gas is air.

42. A wire cleaning device as defined in claim 39 wherein said frequency is greater than 500 hertz.

43. A wire cleaning device as defined in claim 39 wherein said frequency is greater than 18 kHz.

44. A wire cleaning device as defined in claim 39 wherein said high frequency has an rms voltage greater than 1000 volts.

45. A wire cleaning device as defined in claim 39 wherein said passage has a gap width in the general range of 0.2-3.0 cm.

46. A wire cleaning device as defined in claim 39 wherein said dielectric sleeve is formed from a material selected from the class including ceramic, glass and polymer.

47. A device for coating a wire having an outer surface with a given diameter and moving along a given path in a given direction, said device comprising a conductive contact tube surrounding said path and electrically engageable with said wire as it moves along said path and through said tube; a dielectric sleeve adjacent said contact tube and extending in said given direction from said contact tube and around said path to define an annular passage between said dielectric sleeve and said wire; a supply of gaseous material with an outlet directed to said annular passage; a conductive electrode sleeve around said dielectric sleeve; and, a high frequency power source between said electrode sleeve and said tube to create a dielectric barrier discharge plasma in said annular passage to coat said wire with said gaseous material.

48. A wire coating device as defined in claim 47 wherein said gaseous material is vaporized alkali metal selected from the class consisting of potassium, sodium, cesium, rubidium, lithium, barium and calcium.

49. A method of coating a wire having an outer surface and moving in a given direction, said method comprising:

(a) forming a chamber around said moving wire;

(b) creating a dielectric barrier discharge plasma in said chamber; and,

(c) directing a gaseous material into said chamber for coating on said moving wire by said plasma.

50. A method as defined in claim 49 wherein said material is vaporized or particulate alkali metal.

51. A method of cleaning a wire having an outer surface and moving in a given direction, said method comprising:

(a) forming a chamber around said moving wire;

(b) creating a dielectric barrier discharge plasma in said chamber; and,

(c) directing a cleaning gas into said chamber for cleaning said moving wire by said plasma.

52. A method as defined in claim 51 wherein said cleaning gas is air.

53. A method as defined in claim 52 including exposing said wire to a source of ultra violet light.

54. A method as defined in claim 51 including exposing said wire to a source of ultra violet light.

55. A method as defined in claim 50 including exposing said wire to a source of ultra violet light.

56. A method as defined in claim 49 including exposing said wire to a source of ultra violet light.

57. A device for processing a wire having an outer surface and moving along a given path in a given direction, said device comprising: a conductive contact tube surrounding said path and electrically engageable with said wire as it moves along said path and through said tube; a dielectric sleeve adjacent said contact tube and extending in said given direction from said contact tube and around said path to define an annular gas passage between said dielectric sleeve and said wire; an inlet for processing gas adjacent said contact tube to flow said processing gas along said wire in said passage and in said given direction; a conductive electrode sleeve around said dielectric sleeve; and a high frequency, high voltage power source between said electrode sleeve and said contact tube to create a dielectric barrier discharge plasma of said progressing gas in said annular passage.

58. A device as defined in claim 57 wherein said processing gas is a cleaning gas.

59. A device as defined in claim 58 wherein said cleaning gas is air.

60. A device as defined in claim 57 wherein said processing gas is a cleaning gas and said cleaning gas is one or more gases selected from the class consisting of air, oxygen, nitrogen, argon, helium, neon, xenon, krypton. carbon dioxide, hydrogen, nitrous oxide and steam.

61. A device as defined in claim 57 wherein said processing gas is a coating gas.

62. A device as defined in claim 61 wherein said coating gas is vaporized alkali metal or combinations of alkali metals.

63. A device as defined in claim 61 wherein said electrode sleeve is a plurality of sleeve segments spaced in said given direction with said power source including a transformer network having a plurality of secondary windings, where each of said secondary windings has a first end connected to said contact tube and the other end connected to one of said sleeve segments and a primary winding to direct a high frequency, high voltage signal to each of said secondary windings.

64. A device as defined in claim 63 wherein there are several of said sleeve segments, each connected to said contact tube through one of said secondary windings, several primary windings, one associated with each of said secondary

windings, each of said primary windings being in a series resonant circuit, with each of said circuits being tuned to a specific frequency, and a power supply driving said circuits with a variable frequency signal whereby said series circuits resonant when said variable frequency signal conforms to the resonant frequency of said circuit.

65. A device as defined in claim 64 wherein said tuned frequency of said resonant circuits increases with sleeve segments spaced in said given direction.

66. A device as defined in claim 58 wherein said electrode sleeve is a plurality of sleeve segments spaced in said given direction with said power source including a transformer network having a plurality of secondary windings, where each of said secondary windings has a first end connected to said contact tube and the other end connected to one of said sleeve segments and a primary winding to direct a high frequency, high voltage signal to each of said secondary windings.

67. A device as defined in claim 66 wherein there are several of said sleeve segments, each connected to said contact tube through one of said secondary windings, several primary windings, one associated with each of said secondary windings, each of said primary windings being in a series resonant circuit, with each of said circuits being tuned to a specific frequency, and a power supply driving said circuits with a variable frequency signal whereby said series circuits resonant when said variable frequency signal conforms to the resonant frequency of said circuit.

68. A device as defined in claim 67 wherein said tuned frequency of said resonant circuits increases with sleeve segments spaced in said given direction.

69. A device as defined in claim 57 wherein said electrode sleeve is a plurality of sleeve segments spaced in said given direction with said power source including a transformer network having a plurality of secondary windings, where each of said secondary windings has a first end connected to said contact tube and the other end connected to one of said sleeve segments and a primary winding to direct a high frequency, high voltage signal to each of said secondary windings.

70. A device as defined in claim 69 wherein there are several of said sleeve segments, each connected to said contact tube through one of said secondary windings, several primary windings, one associated with each of said secondary windings, each of said primary windings being in a series resonant circuit, with each of said circuits being tuned to a specific frequency, and a power supply driving said circuits with a variable frequency signal whereby said series circuits resonant when said variable frequency signal conforms to the resonant frequency of said circuit.

71. A device as defined in claim 70 wherein said tuned frequency of said resonant circuits increases with sleeve segments spaced in said given direction.

72. A device as defined in claim 71 wherein said dielectric sleeve is transparent and including a sealed light emitting cylindrical chamber concentric with said path and between said conductive electrode sleeve and said dielectric sleeve, said chamber filled with

a light emitting gas with molecules electrically excited by said power source.

73. A device as defined in claim 72 wherein said cylindrical chamber comprises an outer dielectric sleeve between said dielectric sleeve and said conductive electrode sleeve.

74. A device as defined in clam 73 wherein said outer dielectric sleeve has an outer cylindrical surface and said conductive electrode has an inner cylindrical surface with one of said surfaces being a polished mirror.

75. A device as defined in clam 72 wherein said outer dielectric sleeve has an outer cylindrical surface and said conductive electrode has an inner cylindrical surface with one of said surfaces being a polished mirror.

76. A device as defined in claim 70 wherein said dielectric sleeve is transparent and including a sealed light emitting cylindrical chamber concentric with

said path and between said conductive electrode sleeve and said dielectric sleeve, said chamber filled with a light emitting gas with molecules electrically excited by said power source.

77. A device as defined in claim 76 wherein said cylindrical chamber comprises an outer dielectric sleeve between said dielectric sleeve and said conductive electrode sleeve.

78. A device as defined in clam 77 wherein said outer dielectric sleeve has an outer cylindrical surface and said conductive electrode has an inner cylindrical surface with one of said surfaces being a polished mirror.

79. A device as defined in clam 76 wherein said outer dielectric sleeve has an outer cylindrical surface and said conductive electrode has an inner cylindrical surface with one of said surfaces being a polished mirror.

80. A device as defined in claim 69 wherein said dielectric sleeve is transparent and including a sealed light emitting cylindrical chamber concentric with said path and between said conductive electrode sleeve and said dielectric sleeve, said chamber filled with a light emitting gas with molecules electrically excited by said power source.

81. A device as defined in claim 80 wherein said cylindrical chamber comprises an outer dielectric sleeve between said dielectric sleeve and said conductive electrode sleeve.

82. A device as defined in clam 81 wherein said outer dielectric sleeve has an outer cylindrical surface and said conductive electrode has an inner cylindrical surface with one of said surfaces being a polished mirror.

83. A device as defined in clam 80 wherein said outer dielectric sleeve has an outer cylindrical surface and said conductive electrode has an inner cylindrical surface with one of said surfaces being a polished mirror.

84. A device as defined in claim 83 including an induction heating coil surrounding said device between two of said sleeve segments and a circuit to apply a high frequency signal through said coil to heat said wire and confine said plasma.

85. A device as defined in claim 82 including an induction heating coil surrounding said device between two of said sleeve segments and a circuit to apply a high frequency signal through said coil to heat said wire and confine said plasma.

86. A device as defined in claim 81 including an induction heating coil surrounding said device between two of said sleeve segments and a circuit to apply a high frequency signal through said coil to heat said wire and confine said plasma.

87. A device as defined in claim 80 including an induction heating coil surrounding said device between two of said sleeve segments and a circuit to apply a high frequency signal through said coil to heat said wire and confine said plasma.

88. A device as defined in claim 79 including an induction heating coil surrounding said device between two of said sleeve segments and a circuit to apply a high frequency signal through said coil to heat said wire and confine said plasma.

89. A device as defined in claim 78 including an induction heating coil surrounding said device between two of said sleeve segments and a circuit to apply a high frequency signal through said coil to heat said wire and confine said plasma.

90. A device as defined in claim 77 including an induction heating coil surrounding said device between two of said sleeve segments and a circuit to apply a high frequency signal through said coil to heat said wire and confine said plasma.

91. A device as defined in claim 76 including an induction heating coil surrounding said device between two of said sleeve segments and a circuit to apply a high frequency signal through said coil to heat said wire and confine said plasma.

92. A device as defined in claim 75 including an induction heating coil surrounding said device between two of said sleeve segments and a circuit to apply a high frequency signal through said coil to heat said wire and confine said plasma.

93. A device as defined in claim 74 including an induction heating coil surrounding said device between two of said sleeve segments and a circuit to apply a high frequency signal through said coil to heat said wire and confine said plasma.

94. A device as defined in claim 73 including an induction heating coil surrounding said device between two of said sleeve segments and a circuit to apply a high frequency signal through said coil to heat said wire and confine said plasma.

95. A device as defined in claim 72 including an induction heating coil surrounding said device between two of said sleeve segments and a circuit to apply a high frequency signal through said coil to heat said wire and confine said plasma.

96. A device as defined in claim 71 including an induction heating coil surrounding said device between two of said sleeve segments and a circuit to apply a high frequency signal through said coil to heat said wire and confine said plasma.

97. A device as defined in claim 70 including an induction heating coil surrounding said device between two of said sleeve segments and a circuit to apply a high frequency signal through said coil to heat said wire and confine said plasma.

98. A device as defined in claim 69 including an induction heating coil surrounding said device between two of said sleeve segments and a circuit to apply a high frequency signal through said coil to heat said wire and confine said plasma.

99. A device as defined in claim 68 including an induction heating coil surrounding said device between two of said sleeve segments and a circuit to apply a high frequency signal through said coil to heat said wire and confine said plasma.

100. A device as defined in claim 67 including an induction heating coil surrounding said device between two of said sleeve segments and a circuit to apply a high frequency signal through said coil to heat said wire and confine said plasma.

101. A device as defined in claim 66 including an induction heating coil surrounding said device between two of said sleeve segments and a circuit to apply a high frequency signal through said coil to heat said wire and confine said plasma.

102. A device as defined in claim 65 including an induction heating coil surrounding said device between two of said sleeve segments and a circuit to apply a high frequency signal through said coil to heat said wire and confine said plasma.

103. A device as defined in claim 64 including an induction heating coil surrounding said device between two of said sleeve segments and a circuit to apply a high frequency signal through said coil to heat said wire and confine said plasma.

104. A device as defined in claim 63 including an induction heating coil surrounding said device between two of said sleeve segments and a circuit to apply a high frequency signal through said coil to heat said wire and confine said plasma.

105. A device as defined in claim 104 wherein said coil has an inductance and is in a series resonant circuit with a capacitor, inductor and power supply tuned to said series circuit of said coil.

106. A device as defined in claim 101 wherein said coil has an inductance and is in a series resonant circuit with a capacitor, inductor and power supply tuned to said series circuit of said coil.

107. A device as defined in claim 98 wherein said coil has an inductance and is in a series resonant circuit with a capacitor, inductor and power supply tuned to said series circuit of said coil.

108. A device as defined in claim 97 wherein said coil has an inductance and is in a series resonant circuit with a capacitor, inductor and power supply tuned to said series circuit of said coil.

109. A device as defined in claim 96 wherein said coil has an inductance and is in a series resonant circuit with a capacitor, inductor and power supply tuned to said series circuit of said coil.

110. A device for processing a wire moving along a given path, said device comprising: a conductive contact tube surrounding said path and electronically engageable with said wire as it moves along said path; a dielectric sleeve adjacent said contact tube and extending in said given direction from said contact tube and around said path to define an annular gas passage between said dielectric sleeve and said wire; an inlet for processing gas adjacent said contact tube to flow said process gas

along said wire in said passage and in said given direction; and a conductive electrode sleeve around said dielectric sleeve whereby a high voltage, high frequency signal can be applied between said conductive sleeve and said wire to create a plasma of said flowing process gas.

111. A device as defined in claim 110 wherein said signal is created by a series resonant circuit.

112. A device as defined in claim 110 wherein said electrode sleeve is a plurality of sleeve segments spaced in said given direction with said power source including a transformer network having a plurality of secondary windings, where each of said secondary windings has a first end connected to said contact tube and the other end connected to one of said sleeve segments and a primary winding to direct a high frequency, high voltage signal to each of said secondary windings.

113. A device as defined in claim 112 including an induction heating coil surrounding said device between two of said sleeve segments and a circuit to apply a high frequency signal through said coil to heat said wire and confine said plasma.

114. A device as defined in claim 113 wherein said coil has an inductance and is in a series resonant circuit with a capacitor, inductor and power supply tuned to said series circuit of said coil.

115. A wire cleaning device as defined in claim 114 wherein said dielectric sleeve is transparent and including a sealed light emitting cylindrical chamber concentric with said path and between said conductive electrode sleeve and said dielectric sleeve, said chamber filled with a light emitting gas with molecules electrically excited by said power source.

116. A wire cleaning device as defined in claim 115 wherein said cylindrical chamber comprises an outer dielectric sleeve between said dielectric sleeve and said conductive electrode sleeve.

117. A wire cleaning device as defined in claim 113 wherein said dielectric sleeve is transparent and including a sealed light emitting cylindrical chamber concentric with said path and between said conductive electrode sleeve and said dielectric sleeve, said chamber filled with a light emitting gas with molecules electrically excited by said power source.

118. A wire cleaning device as defined in claim 117 wherein said cylindrical chamber comprises an outer dielectric sleeve between said dielectric sleeve and said conductive electrode sleeve.

119. A wire cleaning device as defined in claim 112 wherein said dielectric sleeve is transparent and including a sealed light emitting cylindrical chamber

concentric with said path and between said conductive electrode sleeve and said dielectric sleeve, said chamber filled with a light emitting gas with molecules electrically excited by said power source.

120. A wire cleaning device as defined in claim 119 wherein said cylindrical chamber comprises an outer dielectric sleeve between said dielectric sleeve and said conductive electrode sleeve.

121. A wire cleaning device as defined in claim 111 wherein said dielectric sleeve is transparent and including a sealed light emitting cylindrical chamber concentric with said path and between said conductive electrode sleeve and said dielectric sleeve, said chamber filled with a light emitting gas with molecules electrically excited by said power source.

122. A wire cleaning device as defined in claim 121 wherein said cylindrical chamber comprises an outer dielectric sleeve between said dielectric sleeve and said conductive electrode sleeve.

123. A wire cleaning device as defined in claim 110 wherein said dielectric sleeve is transparent and including a sealed light emitting cylindrical chamber concentric with said path and between said conductive electrode sleeve and said

dielectric sleeve, said chamber filled with a light emitting gas with molecules electrically excited by said power source.

124. A wire cleaning device as defined in claim 123 wherein said cylindrical chamber comprises an outer dielectric sleeve between said dielectric sleeve and said conductive electrode sleeve.

125. A power source for creating a succession of high voltage, high frequency signals, said power source including a plurality of series resonant circuits all connected in parallel with a voltage controlled oscillator and each having a different resonant frequency, a voltage generator with an output signal having a succession of variable voltage segments and a circuit driving said oscillator by said output signal so said oscillator scans through said frequencies of said series resonant circuits.

126. A power source as defined in claim 125 where each of said series resonant circuits include a primary winding of a transformer having an output secondary winding.

127. A power source as defined in claim 126 in combination with a dielectric discharge plasma device comprising a dielectric sleeve surrounding a moving wire to define an annular plasma chamber, said dielectric sleeve surrounded by a conductive

electrode sleeve divided into spaced segments with each segment being in a series circuit with a secondary winding of one of said transformers and said moving wire.

128. A power source and device as defined in claim 127 including a sealed annular light emitting chamber filled with a light emitting gas and positioned between said dielectric sleeve and said conductive electrode sleeve, with said dielectric sleeve being transparent.

129. A power source and device as defined in claim 128 wherein said frequencies of said series resonant circuits associated with said segment increases in the direction of movement of said wire.

130. A power source and device as defined in claim 127 wherein said frequencies of said series resonant circuits associated with said segment increases in the direction of movement of said wire.

131. A device for processing a wire having an outer surface with a given diameter and moving along a given path in a given direction, said device comprising: a conductive contact tube surrounding said path and electrically engageable with said wire as it moves along said path and through said contact tube; a dielectric sleeve extending in said given direction from said contact tube and around said path to define an annular gas passage between said dielectric sleeve and said wire; a gas inlet to said

passage adjacent said contact tube to flow gas in said passage in said given direction; and a conductive electrode sleeve around said dielectric sleeve, where said annular gas passage has a length in the general range of 1-3 meters.

132. A device as defined in claim 131 wherein said gas is a cleaning gas.

133. A device as defined in claim 132 wherein said cleaning gas includes one or more of the gases selected from the class consisting of oxygen, nitrogen, argon, helium, neon, xenon, krypton, carbon dioxide, hydrogen, nitrous oxide and steam.